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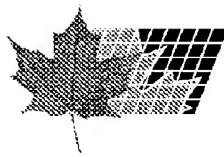
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(54) **AIGUILLE DE SERINGUE EFFRACTIVE**
(54) **INVASIVE NEEDLE**

(57)

An improved intravenous needle for use with a syringe or like blood extraction or fluid addition apparatus comprising an elongate tubular body having a vein-penetrating tip at a distal end and a proximal end adapted to cooperate with said syringe or said fluid addition apparatus; the improvement comprising said body having an outer surface having a visible circumferential marker adjacent said tip at a pre-selected desired distance therefrom. The present of the marker reduces the risk and frequency of unwanted needle tip withdrawal from the skin and thus prevent the need to use another vein location.



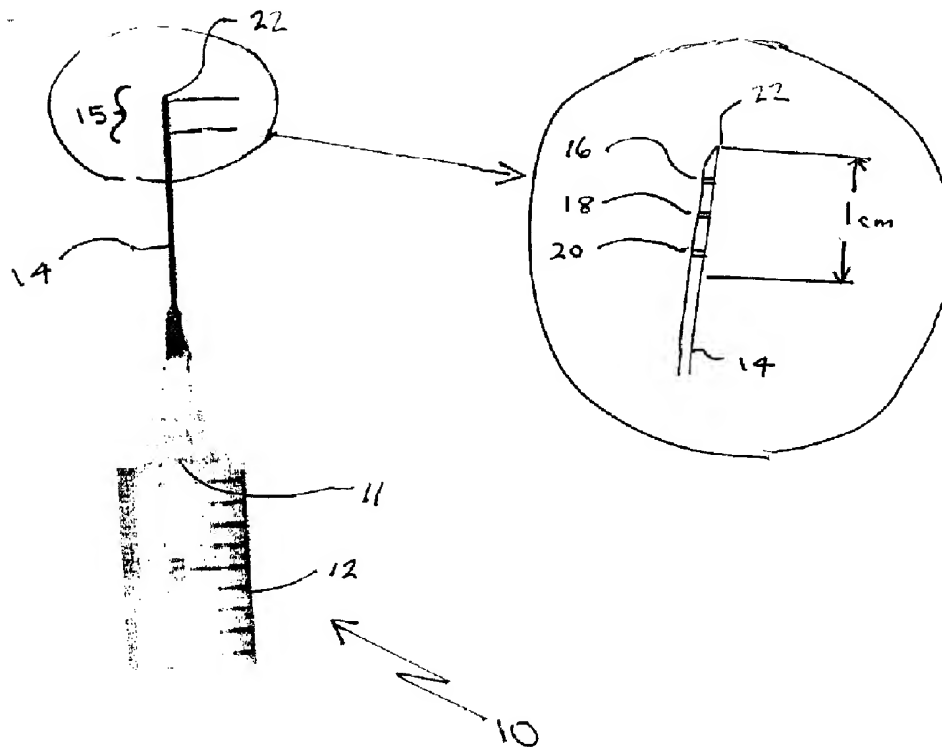
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ABSTRACT OF THE DISCLOSURE

5 An improved intravenous needle for use with a syringe or like blood
extraction or fluid addition apparatus comprising an elongate tubular body having
a vein-penetrating tip at a distal end and a proximal end adapted to cooperate with
said syringe or said fluid addition apparatus; the improvement comprising said
body having an outer surface having a visible circumferential marker adjacent
said tip at a pre-selected desired distance therefrom. The present of the marker
10 reduces the risk and frequency of unwanted needle tip withdrawal from the skin
and thus prevent the need to use another vein location.

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INVASIVE NEEDLE**FIELD OF THE INVENTION**

10 This invention relates to marked needles for invasive penetration of veins and to syringes and like apparatus of use with said needles for intravenous blood extraction or fluid addition.

BACKGROUND TO THE INVENTION

15 Hyperdermic syringes for blood extraction and fluid addition apparatus for feeding blood, saline solution and the like to a mammal require intravenous penetration by a suitably sized needle. At present, the tip of the needle pierces the dermis at an acute angle in the region overlying a vein selected by a nurse, doctor or like person from a visual inspection. However, even when the needle does not bypass the vein and enters
20 the vein, a successful entry and resultant connection is often not made by reason that the needle tip penetrates and passes through and out the opposing wall of the vein. This problem is addressed by slow withdrawal of the needle, and, by guesswork, experience and the like of the operator the tip is manipulated to be positioned, ideally, within an upper central part of the vein. This manipulation can be time consuming, and, in general,
25 uncomfortable for the patient. Further, unfortunately, the tip is too often accidentally withdrawn from the dermis, which causes the vein to collapse and prevent another attempt for intravenous entry in this region. Thus, a new body part must be selected. This procedure may need to be repeated several times, particularly, in the hands of an inexperienced operator. It is not unusual for at least 5 – 10 attempts to be made, at some
30 discomfort and anxiety to the patient and frustration to the operator. Subsequently, the

skin of the patient may need to be cut to both find the vein and for proper depth insertion to be attained.

There is, therefore, a need to provide an improved method of achieving the correct depth of needle tip insertion by reducing the frequency of tip withdrawal from the skin.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a needle for invasive penetration into a vein which reduces the risk of unwanted withdrawal of the needle tip from the skin and obviate the need to use another vein location.

Accordingly, the invention provides an improved intravenous needle for use with a syringe or like blood extraction or fluid addition apparatus comprising an elongate tubular body having a vein-penetrating tip at a distal end, and a proximal end adapted to cooperate with said syringe or said fluid addition apparatus; the improvement comprising said body having an outer surface having a portion defining a visible marker adjacent said tip at a pre-selected desired distance therefrom.

In one embodiment, the marker is a single, circumferential position-identifying feature, such as a coloured ring or band or a groove or upstanding protrusion on the surface of the needle.

In preferred embodiments, the needle surface may have a plurality of such markers, for example, 2, 3 or 4 at a pre-selected desired distance from the needle tip for use with a skin or vein of various thicknesses.

The markers, when coloured, may be of the same or different colours.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be better understood, preferred embodiments will now be described by way of example only, with reference to the accompanying drawings wherein:

Fig. 1 is a diagrammatic representation of a syringe comprising a needle according to the invention inserted through a vein of a human hand;

Figs. 2A – 2D are diagrammatic representations of cross-sections of a needle according to the invention in relation to a vein;

Fig. 3 is a perspective view in part of a syringe according to the invention; wherein Fig. 3A is an enlarged view of the distal end of needle of syringe; and wherein the same numeral denotes like parts.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Fig. 3 shows generally as 10 a hyperdermic syringe having plunger 11 within a graduated fluid receiving chamber 12 and a hyperdermic needle 14 connected thereto, in any suitable manner known in the art. Needle 14 is typically formed of stainless steel and has a length of, typically, 3 – 10 cm, and an O.D. of approximating 0.5 – 2 mm, defined in the art as specific gauges.

Needle 14 at its distal or tip region 15 is provided with a plurality of markings, -3 in the embodiment shown constituted as discrete individual circumferential coloured lines or rings 16, 18, 20, approximately 2, 4, 6 mm, respectively, from tip 22.

Fig. 1 shows needle 14 inserted through skin 24 and into, through and out of the other side of a vein 26 of a human hand, shown generally as 28.

Figs. 2A – 2D show the portions of needle 14 and tip 22 relative to vein 26 under skin 24. Fig. 2A illustrates that tip 22 protrudes unacceptably through and unacceptably beyond vein 26; Fig. 2B shows tip 22, is acceptably positioned within vein 26; Fig. 2C shows tip 22 ideally positioned within vein 26; while Fig. 2D shows that tip 22 has been, prematurely, accidentally withdrawn from vein 26 and skin 24 and has collapsed after being so punctured by needle 14.

In operation, needle 14 is inserted through skin 24 and, at least into, if not through, vein 26, such that all three marker lines 16, 18 and 20 are hidden under skin 24. Needle 14 is slowly withdrawn until upper line 20 is seen and withdrawal action paused until blood is observed around needle 14, and at which stage plunger 11 of syringe 10 is withdrawn to effect filling of chamber 12. Should blood not be observed at this degree of

withdrawal, further withdrawal to marker line 18 is carried out with a further subsequent pause to detect any blood presence. Again, should there be no blood observed, needle 14 is further withdrawn to final line 16. It is recognized that further withdrawal beyond final line 16 is likely to cause unwanted withdrawal of tip 22. Manipulation of tip 22 at marker lines 16, 18 or 20 is most likely to result in a correct depth location as to provide tip 22 suitably positioned within vein 26. When the needle is at the last or terminal line 16, and no blood is seen, this is indicative that the needle tip was never in a vein, and a new skin location remote from this location must be selected.

10 In an alternative embodiment, the needle is part of a blood withdrawal apparatus, rather than a syringe, for typical Red Cross and related blood collection agencies.

The marker lines may be identified by a suitable means, such as for example, coloured circumferential lines or bands of the same or different colours or a circumferential groove. The needle according to the invention, is of value also when other intravenous entry is required such as for a plasma or saline drip treatment or drug-
15 solution in a syringe.

Although this disclosure has described and illustrated certain preferred embodiments of the invention, it is to be understood that the invention is not restricted to those particular embodiments. Rather, the invention includes all embodiments which are functional or mechanical equivalents of the specific embodiments and features that have
20 been described and illustrated.

Claims

1. An improved intravenous needle for use with a syringe or like blood extraction or fluid addition apparatus comprising an elongate tubular body having a vein-penetrating tip at a distal end and a proximal end adapted to cooperate with said syringe or said fluid addition apparatus; the improvement comprising said body having an outer surface having a portion defining a visible marker adjacent said tip at a pre-selected desired distance therefrom.
2. A needle as defined in claim 1 comprising a plurality of visible, distinct circumferential markers adjacent said tip at pre-selected distances therefrom.
3. A needle as defined in claim 1 or claim 2 wherein each of said markers is represented as a circumferential line by the same or a different colour.
4. A needle as defined in claim 1 or claim 2 wherein each of said markers is represented as a circumferential coloured surface, wherein said colour is the same or different.
5. A needle as defined in claim 1 or claim 2 wherein said marker is represented as a groove or upstanding ring on said surface.

